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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/682,478

10/10/2003

Woo-Jong Cho

277/022

1460

7590

10/06/2004

LEE & STERBA, P.C.
Suite 2000
1101 Wilson Boulevard
Arlington, VA 22209

EXAMINER

VO, HIEN XUAN

ART UNIT

PAPER NUMBER

2863

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/682,478

Applicant(s)

CHO ET AL.

Examiner

Hien X. Vo

Art Unit

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 6 is/are rejected.
- 7) ☒ Claim(s) 2-5 and 7-10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Dunne (U.S. Patent No. 6,282,803) and further in view of Mounlin et al. (U.S. Patent No. 4,414,753).

With respect to claims 1 and 6, Dunne discloses a self calibrating circuit for determining an accurate zero compensation for a fluxgate compass including a detection unit for detecting signals X and Y outputted from X-axis and Y-axis coils of the geomagnetic sensor (see e.g. Fig. 1, item 12 and col. 7, lines 50-64), a display unit for displaying the calibration termination and a calibration progress state for the geomagnetic sensor (see e.g. Fig. 1, item 44 and col. 10, lines 5-10), and a control unit for outputting a driving signal to the display unit to display a state of the

calibration termination (see e.g. fig.3, item 112) except for teaching a calculation unit for calculating slopes dx/dt and dy/dt of the signals x and y , and the number of sign changes N_x and N_y of the slope dx/dt of the signal x and the slope dy/dt of the signal y .

Mounlin et al. disclose a process for compensating the magnetic disturbances in the determination of a magnetic heading, and devices for carrying out this process that includes a calculation unit for calculating slopes dx/dt and dy/dt of the signals x and y , and the number of sign changes N_x and N_y of the slope dx/dt of the signal x and the slope dy/dt of the signal y (see e.g. cols. 2-10).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the calculating module in accordance with the slopes dx/dt and dy/dt of the x and y signal from the geomagnetic sensor as taught by Mounlin et al. to the self calibration zero-compensation circuit for a fluxgate compass of Dunne to correct for zero drift of the magnetic sensor due to the external magnetic fields of the earth and increase the reliability of the output data of a geomagnetic sensor so greatly that the geomagnetic sensor can be correctly detected despite disturbances from an external magnetic field.

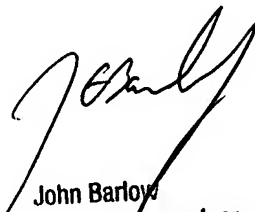
4. Claims 2-5 and 7-10 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien X. Vo whose telephone number is (571) 272-2282. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hien Vo
September 29, 2004



John Barlow
Supervisory Patent Examiner
Technology Center 2800